

# PATENT SPECIFICATION

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## (54) IMPROVEMENTS IN OR RELATING TO WALLS FOR CONTAINERS OR CONTAINER VEHICLES

(71) We, WAGGONFABRIK TALBOT, a German Kommanditgesellschaft, of 213-237 Julicher Strasse, 5100 Aachen, Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:-

The present invention relates to wall parts for containers and bodies of vehicles, for example railway goods wagons.

According to the present invention, there is provided a wall part comprising an opening and at least one door leaf for closing the opening, the door leaf being pivotally mounted by means of two hinges, and the door leaf being tiltable, in the plane of the door opening, about a pivot formed on one of said hinges and, in the closed position, being locked, by inter-engaging parts of the door leaf and wall part, and the door leaf having an upper and lower transom which cooperates in the closed position of the door leaf in sealing manner with upper and lower cross-members of the wall part, said lower cross-member comprising a supporting strip with an upwardly-directed bar-like portion extending at least over the breadth of the door opening, said bar-like portion being arranged to cooperate with a recess extending along the entire length of the lower transom of the door leaf.

Preferably the upper cross-member comprises a profiled strip which is J-shaped in cross-section, the outer arm of which cooperates with a hook-shaped upper closure strip of the upper transom of the door leaf and the inner arm of which forms with its upper end a rain gutter.

By this construction there is prevented, besides an automatic alignment of the upper transom of the door leaf, a penetration of water in the door region since a flowing down of water on the outside of the upper cross-member is prevented by the rain gutter. The

water reaching the side of the upper cross-member as a result of pouring rain is caught by a gutter formed by the J-sectioned strip, which for this purpose contains water run-off openings, preferably in the corner region of the wall part. In the region of the bar of the J-sectioned strip there is also constructed a water drip-off edge which ensures that any water that may have penetrated through wind pressure cannot pass through into the interior along the underside of the upper cross-member, but instead, drips off in the region of the upper transom of the door leaf.

The upper transom of the door leaf is preferably provided with a water-catching gutter of U-shaped cross-section which diverts to the outside, via vertical labyrinth seals of the door leaf, the water which has penetrated and is dripping from the water drip-off edge. Thus the whole of the roof water is diverted by means of the rain gutter in the corner region of the wall part and cannot reach that region of the wall part in which the door opening is present. The considerably smaller amounts of water occurring directly at the upper cross-member are likewise diverted at the ends of the wall part by means of J-sectioned strip. Any water that may have penetrated through wind pressure is finally, by means of the drip-off edge, diverted into a water-catching gutter at the upper transom of the door leaf and taken away in the region of vertical labyrinths, so that, in all, a complete impermeability to sprayed water is achieved.

In order to avoid a wedging of a load against parts of the door leaf and which might make the opening of the door leaf impossible, the door leaf, which may consist of leaf parts foldably joined to one another, is preferably constructed with a smooth internal surface. As a result, not only is a sure opening of the door leaf achieved but projecting edges are avoided which may impede passage of goods through the door opening during loading and unloading.

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In a preferred embodiment of the invention, the supporting strip is of d-shaped cross-section and the bar-like portion is of arcuate cross-section. The recess in the lower transom of the door leaf is preferably formed by an arched closure profile, the outer arm of which is downwardly prolonged. The closure profile may form, together with a U-profile lying in the same direction, the lower transom of the door leaf, so that the lower cross-member of the wall part and the transom of the door leaf as a whole may be produced from simple and hence low-cost profiles.

In order to be able to produce also the upper cross-member and the upper transom of the door leaf simply and inexpensively it is preferred that the upper transom is formed in one piece with the hook-shaped closure strip and the water-catching gutter by means of a strip which is C-shaped in cross-section. The upper flange may be formed by a box-shaped main profile with a cross-section in form of a recumbent U and by the strip of J-shaped cross-section, which lies with its bar on an extended lower arm of the main profile and which, with the upper part of its inner arm, is secured to an upwardly-directed flange on the upper arm of the main profile. Through the use of two, each of them simple, components, the formation of the upper flange, including the provision of the rain gutter, is achieved. When the extended lower arm of the main profile is angularly bent at its end in order to form the water drip-off edge, there is provided a one-piece construction of the water drip-off edge which cooperates with the water-catching gutter in the upper transom of the door leaf, without any additional components for this purpose being necessary.

An embodiment of the invention, will now be described, by way of example only, with reference to the accompanying diagrammatic drawings, in which:

Figure 1 is a side elevation of a container wall part having two doors, the doors being shown in their closed position;

Figure 2 is a section taken on line II-II of Figure 1;

Figure 3 is a side elevation corresponding to Figure 1 showing one of the doors lifted into a raised position preparatory to opening the door;

Figure 4 is a section, taken on line IV-IV, of Figure 3, but with the door partly opened and folded;

Figure 5 is a fragmentary vertical section taken on line V-V in Figure 1; and

Figure 6 is a fragmentary vertical section taken on line VI-VI in Figure 1.

The wall part shown in the drawings comprises two corner pillars 1 which are joined to one another by means of a lower cross-member 2 and an upper cross-member 3 and which carry, at both ends, corner fittings 4 as standardised for containers.

The container wall part shown in Figures 1 and 3 possesses two doors in the form of leaves 5 each of which consists of a leaf part 5a and a leaf part 5b. The leaf parts 5a and 5b are joined to one another by folding hinges 5c so that, after opening of the door leaf 5, the leaf part 5b can be folded back onto the outside surface of the leaf part 5a, as is shown in Figure 4.

Each door leaf 5 has an upper door hinge 6 and a lower hinge 7 which mount the door leaf 5 for pivotal movement into and out of its open position. Such pivotal movement is, however, not possible until after the door leaf 5 has been raised out of the closed position shown in Figure 1, by raising the door leaf in the plane of the door opening, by tilting the leaf about a pivot 6a formed on the upper door hinge 6 into the position shown on the right-hand side of Figure 3. During raising of the door leaf 5 into its tilted-in position, the lower door hinge 7 enables not only the necessary sliding movement but fixes the door leaf 5 in its raised position during the tilting movement.

On the lower cross-member 2, according to Figure 6, a continuous profiled supporting strip 8 of d-shaped cross-section is welded which is provided with an upwardly-directed bar-like portion 9 of arcuate form. In order to stiffen the supporting strip 8, reinforcing metal webs 10 are welded within the strip.

There cooperates with the bar-like portion 9 of the supporting strip 8 a channel or recess 11a which is constructed in a lower transom 11 of the door leaf 5. This transom 11 is formed by a U-sectioned strip 12 with downwardly directed arms and an arched closure strip 13, the arms of which likewise extend downwardly and which, together with the U-sectioned strip 12, forms the lower transom 11 which is of box-section. The outer arm 13a of the closure strip 13 and the corresponding arm of the strip 12 are extended downwardly in order to cover totally the supporting strip 8 in the closed state of the door leaf 5.

The upper cross-member 3 consists, according to Figure 5, of a main strip 14 which is substantially of U-shaped cross-section, the arms 14a and 14b of which lie horizontally. On the upper arm 14b there is constructed a vertically-upwardly directed angular bend 14c which forms a rain gutter 16 on the main strip 14. To the front side of the angular bend 14c there is welded an inner arm 15b of a J-sectioned strip 15. The bar 15c of the strip 15 lies on the lower arm 14a of the main strip 14. The outer arm 15a of the strip 15 is directed upwardly and is bent slightly inwardly and cooperates with an upper transom 18 of the door leaf.

The upper transom 18 of the door leaf 5 consists of a strip of C-shaped cross-section which has a hook-shaped closure strip 18a for

co-operation with the outer arm 15a of the strip 15 and forms with its lower part a water-catching gutter 18b of U-shaped cross-section. Above this water-catching gutter 18b in the transom 18 of the door leaf 5 there is constructed on the upper cross-member 3 a water drip-off edge 17, by bending the front end of the lower arm 14a of the main strip 14.

In order to open for example the right-hand door leaf 5 of the container shown in Figure 1, the door leaf 5 is raised by means of a hand lever 19 which tilts the door leaf about the pivot 6a. The raised position of the right-hand door leaf 5 is shown in Figure 3. The hand lever 19 can be used selectively both for the right-hand and for the left-hand door leaf 5.

By raising the door leaf 5, the hook-shaped closure strip 18a of the upper transom 18 is raised from the outer arm 15a of the strip 15 so that the door leaf 5 with its upper transom 18 comes free from the upper cross-member 3. Simultaneously, the closure strip 13 of the lower transom 11 of the door leaf 5 is raised so that the bar-like portion 9 of the supporting strip 8 no longer lies inside the channel 11a of the lower transom 11. The door leaf 5 can therefore, in the position shown on the right-hand side of Figure 3 be, without difficulties, swung outwardly to its open position by means of the door hinges 6 and 7, and opened.

As shown in Figures 1 and 3, the pivot 6a is located on the upper door hinge 6. In this context it is understandable that the lower hinge 7 arranged on the door leaf 5 must be slidable relative to its anchorage on the corner pillar 1 in order to render possible the raising movement of the door leaf 5 about the pivot 6a which movement is effected by means of the hand lever 19. In its raised position, the door leaf 5 is held by the lower door hinge 7 so that it does not drop during the subsequent pivotal movement.

In the embodiment shown, before the door leaf 5 is fully opened, the leaf part 5b (which by means of the hinges 5c, is hinged on the leaf part 5a) is swung back onto the outside of the leaf part 5a, as is shown in Figure 4, so that when the door leaf 5 is fully opened the effective width of the opened door leaf is reduced.

In order to close the door leaf 5, the leaf part 5b is swung into co-planar alignment with the leaf part 5a before the door leaf 5 is swung towards its closed position. Then by means of the hand lever 19, the door leaf 5 is lowered by tilting the leaf about the pivot 6a on the upper door hinge 6. During this lowering movement, the hook-shaped closure strip 18a of the upper transom 18 engages behind the outside arm 15a of the strip 15 on the upper cross-member 3. Simultaneously, the arched closure strip 13 of the lower transom 11 drops over the bar 9 of the supporting strip 8 arranged on the lower cross-member 2. As a result,

there is achieved not only in the lowered position according to Figure 1, a secure locking of the door leaf 5 to the lower cross-member 2 and upper cross-member 3 but, during lowering, an exact alignment of the leaf parts 5a and 5b, since the parts of lower cross-member 2 and upper cross-member 3 which cooperate with the lower transom 11 and upper transom 18, respectively, effect, besides a locking action, at the same time a guidance of the door leaf 5. In the locked position, the door leaf lies with its entire breadth firmly against the cross-member 2 and upper cross-member 3, so that stresses at individual points are avoided when the door leaf 5 is stressed from the inside by goods loaded within the container. In order to avoid jamming of the load, the leaf parts 5a and 5b are constructed with smooth surfaces on the inside. When the door leaves are closed, penetration of water sprays into the container is completely prevented as will now be described with reference to Figures 5 and 6.

By the construction of the rain gutter 16 on the upper flange 3, water collecting on the roof of the container is prevented from pouring into the region of the door opening. Any water which, during severe rainfall may reach the outside of the strip 15 is diverted by the strip 15 of J-shaped cross-section which has water run-off openings in the corner region of the wall part. In the event of water present in the strip 15 being forced over the outer arm 15a of the strip 15 by wind pressure, this water cannot run on the underside of the lower arm 14a of the main strip 14 into the interior of the container since, still in the region of the upper transom 18 of the door leaf 5, it reaches the water drip-off edge 17, from which it drips off downwardly. The dripping water reaches the water-catching gutter 18b constructed in the upper transom 18, from which gutter 18b it is diverted via vertical labyrinth seals which are not numbered individually in the drawing but are indicated schematically in Figures 2 and 4.

The joint between the lower transom 11 of the door leaf 5 and the lower cross-member 2 is also constructed in manner impervious to the penetration of sprayed water. For this purpose the outer arms of the U-sectioned strip 12 and closure strip 13 are extended downwardly over the full height of the supporting strip 8. Any water which may be forced over the bar-like portion 9 through wind pressure, flows through appropriately provided water run-off openings out of the gutter formed between the bar 9 and the adjacent vertical part of the lower cross-member 2 without it being possible for this water to reach the upper side of the lower cross-member 2, the horizontal upper bar of which, in addition, projects opposite the front vertical bar.

The embodiment particularly described

uses components which are simple and inexpensive to manufacture, and enables a complete impermeability to sprayed water to be achieved as a result of the labyrinth form of the seals. The forces originating from the load which are exerted on the door are distributed uniformly over the whole breadth of the door onto the lower cross-member. In addition, the correct location of the lower transom of the door leaf onto the supporting strip is automatically effected, so that the door leaves are locked reliably and safely even when they are formed by a plurality of leaf parts which would otherwise be difficult to align

correctly

#### WHAT WE CLAIM IS:-

1. A wall part comprising an opening and at least one door leaf for closing the opening, the door leaf being pivotally mounted by means of two hinges, and the door leaf being tiltable, in the plane of the door opening, about a pivot formed on one of said hinges and, in the closed position, being locked, by interengaging parts of the door leaf and wall part, and the door leaf having an upper and lower transom which cooperates in the closed position of the door leaf in sealing manner with upper and lower cross-members of the wall part, said lower cross-member comprising a supporting strip with an upwardly-directed bar-like portion extending at least over the breadth of the door opening, said bar-like portion being arranged to cooperate with a recess extending along the entire length of the lower transom of the door leaf.

2. A wall part according to claim 1, wherein the upper cross-member comprises a profiled strip which is J-shaped in cross-section having an outer arm which cooperates with a hook-shaped upper closure strip of the upper transom of the door leaf and having an inner arm, the upper end portion of which forms a rain gutter.

3. A wall part according to claim 2, wherein a water drip-off edge is formed in the region of the bar of the J-sectioned strip.

4. A wall part according to claim 2 or claim 3, wherein water run-off openings are formed in the J-sectioned strip.

5. A wall part according to any one of

claims 1 to 4, wherein the upper transom of the door leaf is provided with a water-catching gutter of U-shaped cross-section.

6. A wall part according to any one of claims 1 to 5, wherein the door leaf has a smooth internal surface.

7. A wall part according to at least one of claims 1 to 6, wherein the supporting strip is of generally d-shaped cross-section and the bar-like portion is of arcuate cross-section.

8. A wall part according to any one of claims 1 to 7, wherein the recess in the lower transom of the door leaf is formed by an arched closure strip having an outer arm which is extended downwardly to overlie the side of the supporting strip.

9. A wall part according to claim 8, wherein the closure strip closes the open side of a U-section strip to form therewith the said lower transom which is of box-like section.

10. A wall part according to any one of claims 1 to 9, wherein the upper transom is constructed in one piece by a strip of C-shaped cross-section.

11. A wall part according to claim 2 or claim 2 and any one of claims 3 to 10, wherein the upper cross-member is formed by a U-sectioned strip, the open side of which is closed by the inner arm of the J-sectioned strip, the bar of which lies on a lower arm of the U-sectioned strip and the inner arm of which is secured at its upper end portion to an upwardly-directed flange on the upper arm of the U-sectioned strip, the lower arm of the U-sectioned strip being longer than the upper arm thereof.

12. A wall part according to claims 3 and 11, wherein the lower arm of the U-sectioned strip is angularly bent at its end in order to form the water drip-off edge.

13. A wall part substantially as hereinbefore described with reference to the accompanying drawings.

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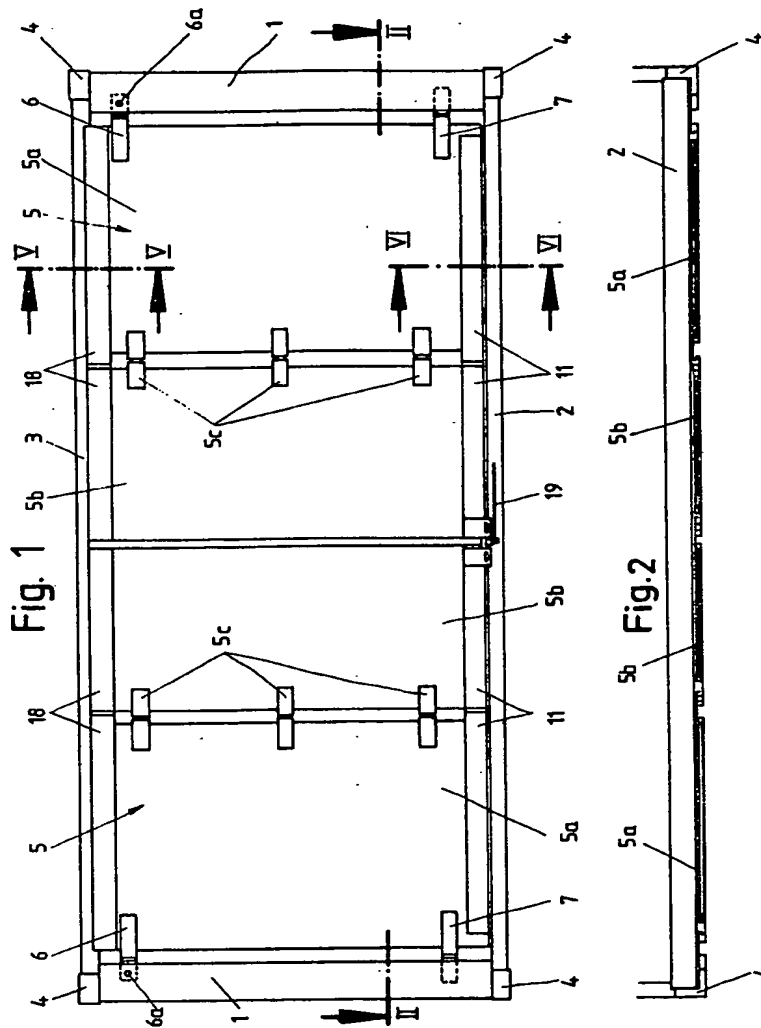
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COMPLETE SPECIFICATION

3 SHEETS

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Sheet 1

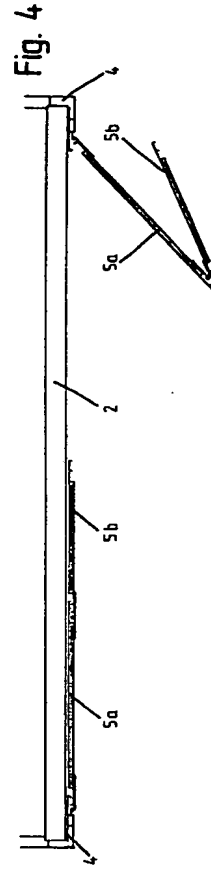
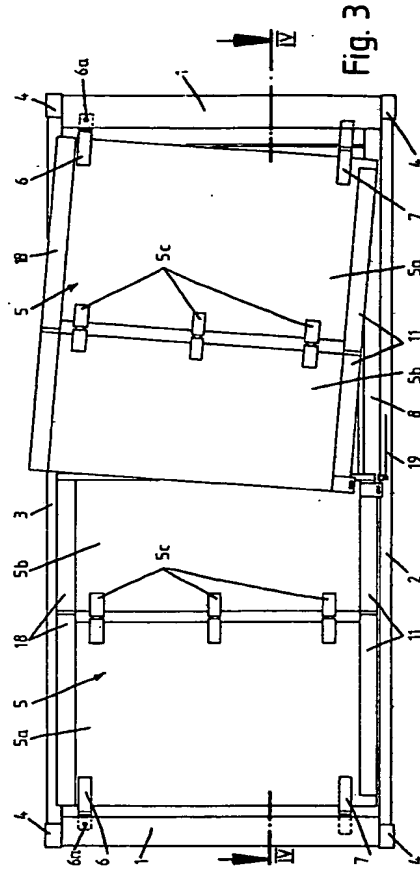


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COMPLETE SPECIFICATION

3 SHEETS

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Sheet 2



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